

IN THE CLAIMS

1. (Original) A method of manufacturing a semiconductor device on a semiconductor substrate, comprising:

forming a gate dielectric on the semiconductor substrate;
forming a gate stack overlying the gate dielectric, the gate stack having a sidewall, wherein the gate stack comprises a conductive layer and a capping nitride layer overlying the conductive layer;
selectively depositing a liner over the gate stack such that the liner is deposited on the capping nitride layer at a rate lower than the rate of deposition on the conductive layer, so that the liner is thinner on the capping nitride layer than on the conductive layer; and
forming a nitride spacer over the liner.

2. (Original) The method of claim 1, wherein said forming a nitride spacer comprises:

forming a layer of nitride spacer material conformally over the liner; and
etching back the layer of nitride spacer material.

3. (Original) The method of claim 1, wherein the liner is deposited on the capping nitride layer at a rate approximately one-fifth the rate of deposition on the conductive layer.

4. (Original) The method of claim 1, wherein the liner is deposited selectively on the conductive layer in a thickness at least twice a thickness of deposition of the capping layer.

5. (Original) The method of claim 1, wherein said liner is formed of oxide.

6. (Currently Amended) A method of manufacturing a semiconductor device on a semiconductor substrate, comprising:

forming at least two adjacent gate stacks over the substrate, the adjacent gate stacks each having a sidewall opposing each other,

wherein each of the gate stacks comprises a conductive layer and a capping nitride layer overlying the conductive layer;

selectively depositing a liner directly on the conductive layer and on the capping nitride layer ~~over the gate stacks~~, so that the liner is thicker on the conductive layer than on the capping nitride layer; and

forming adjacent at least two nitride spacers on the liner, overlying the opposing sidewalls.

7. (Original) The method of claim 6, wherein the liner is deposited over the capping nitride layer at a rate lower than the rate of deposition on the conductive layer.

8. (Original) The method of claim 6, wherein said forming adjacent nitride spacers comprises:

forming a layer of nitride spacer material conformally over the liner; and etching back the layer of nitride spacer material.

9. (Original) The method of claim 6, wherein the adjacent nitride spacers have top, middle, and bottom spaces therebetween, and wherein the bottom space is substantially shorter than the middle space.

10. (Original) The method of claim 6, wherein the liner is formed of oxide.

11. (Original) The method of claim 6, further comprising a pre-metal dielectric layer overlying the gate stacks, capping layer and nitride spacers.

12. (Currently Amended) A gate structure, comprising:

a gate dielectric on a semiconductor substrate;

a gate stack overlying the gate dielectric, the gate stack having a sidewall, wherein the gate stack comprises a conductive layer and a capping nitride layer overlying the conductive layer;

an oxide liner disposed on the sidewall of the gate stack, wherein the thickness of the liner is substantially thicker on the conductive layer than on the capping nitride layer, the liner having a step along the boundary of the capping nitride layer and the conductive layer;

a nitride sidewall spacer disposed over the liner and sloped away from the gate stack adjacent the gate dielectric.

13. (Original) The gate structure of claim 12, further comprising:
a PMD layer overlying the gate stack, the nitride spacer, and the capping layer.

14. (Original) The gate structure of claim 13, further comprising:
a contact plug formed within the PMD layer adjacent the gate stack.

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15. (Original) A gate structure, comprising:
a gate stack having a sidewall including a conductive layer;
a capping nitride layer on the conductive layer;
a liner disposed on the sidewall of the gate stack,
wherein the thickness of the liner is substantially thinner on the capping nitride layer than on the conductive layer;
a nitride spacer formed along opposite sides of the gate stack overlying the liner, the thickness of the nitride layer having a transition adjacent a boundary between the conductive layer and the capping nitride layer.

16. (Currently Amended) A semiconductor device, comprising:
at least two adjacent gate stacks over a semiconductor substrate, the adjacent gate stacks each having a sidewall opposing each other, wherein each of the gate stack comprises a conductive layer and a capping nitride layer overlying the conductive layer;
a liner selectively deposited overlying opposing sidewalls of the gate stacks, the liner being thinner on the capping nitride layer than on the conductive layer, the liner having a step along the boundary of the capping nitride layer and the conductive layer; and
at least two adjacent nitride sidewall spacers on the liner each overlying the opposing sidewalls.

17. (Original) The device of claim 16, wherein the at least two adjacent sidewall spacers have a bottom, middle, and top space therebetween, and wherein the bottom space 36 is substantially shorter than the middle space.

18. (Original) The device of claim 16, wherein the top space is wider than the middle space.

19. (Original) The device of claim 16, wherein the gate stacks are closely spaced to provide a gap between them, and the gate stacks, liner and sidewall spacers are covered by a PMD layer, a portion of the PMD layer filling the gap.

20. (Original) The device of claim 16, wherein the portion of the PMD layer filling the gap being free of voids.

21. (New) The method of claim 1, wherein selectively depositing a liner comprises using surface characteristics of the gate stack.

22. (Re-presented - formerly claim 7) A method of manufacturing a semiconductor device on a semiconductor substrate, comprising:

forming at least two adjacent gate stacks over the substrate, the adjacent gate stacks each having a sidewall opposing each other,

wherein each of the gate stacks comprises a conductive layer and a capping nitride layer overlying the conductive layer;

selectively depositing a liner over the gate stacks, so that the liner is thicker on the conductive layer than on the capping nitride layer; and

forming adjacent at least two nitride spacers on the liner, overlying the opposing sidewalls,

wherein the liner is deposited over the capping nitride layer at a rate lower than the rate of deposition on the conductive layer.

23. (New) The method of claim 22, wherein the liner is deposited on the capping nitride layer at a rate approximately one-fifth the rate of deposition on the conductive layer.

24. (New) The method of claim 22, wherein the liner is deposited selectively on the conductive layer in a thickness at least twice a thickness of deposition of the capping layer.

25. (New) The method of claim 22, wherein said forming adjacent nitride spacers comprises:

forming a layer of nitride spacer material conformally over the liner; and etching back the layer of nitride spacer material.

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26. (New) The method of claim 22, wherein the adjacent nitride spacers have top, middle, and bottom spaces therebetween, and wherein the bottom space is substantially shorter than the middle space.
